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ABSTRACT

This mathematics textbook, developed for use with slow learners and learning disabled students in secondary school, contains 17 chapters. Among the topics covered are: number words; place value; rounding whole numbers; addition, subtraction, multiplication, and division of whole numbers; reducing fractions; mixed numbers; lowest common denominator; comparing fractions; and addition, multiplication, and division of fractions and mixed numbers. Each chapter begins with the statement of an "aim" and a "method." (MK)

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MATH FOR SURVIVAL

Harry Finkelstein

SE 030 290

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In developing this series of math books, I am indebted to several sources for ideas and inspiration. The idea for this series came from the students in the Career Skills Development Program at James Madison High School. They wanted a math book they could use.

When I started working on this book, I had the cooperation of the entire school. From the Principal, Ira Ewen to the head of the Math Department Murray Navon.

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CHAPTER ONE

Number Words and Place Value

I. AIM: To read and write number words.

II. METHOD: To read and write whole numbers, we must first learn how to say them and to recognize the number words when they are written.

III. EXAMPLE:

o n e spells one. That is the number word for 1

t w o spells two. That is the number word for 2

CHAPTER ONE

Number Words

A		B		C	
ONES		TENS		TENS + ONES	
one	1	ten	10	eleven	11
two	2	twenty	20	twelve	12
three	3	thirty	30	thirteen	13
four	4	forty	40	fourteen	14
five	5	fifty	50	fifteen	15
six	6	sixty	60	sixteen	16
seven	7	seventy	70	seventeen	17
eight	8	eighty	80	eighteen	18
nine	9	ninety	90	nineteen	19
zero	0				

D		E	
HUNDREDS		THOUSANDS	
one hundred	100	one thousand	1,000
two hundred	200	two thousand	2,000
three hundred	300	three thousand	3,000
four hundred	400	four thousand	4,000
five hundred	500	five thousand	5,000
six hundred	600	six thousand	6,000
seven hundred	700	seven thousand	7,000
eight hundred	800	eight thousand	8,000
nine hundred	900	nine thousand	9,000

F			
MILLIONS			
one million	1,000,000	six million	6,000,000
two million	2,000,000	seven million	7,000,000
three million	3,000,000	eight million	8,000,000
four million	4,000,000	nine million	9,000,000
five million	5,000,000		

Write the numerals for these word statements.

1) one_____ 6) thirteen_____

2) six_____ 7) seventeen_____

3) two_____ 8) thirty_____

4) zero_____ 9) fifty_____

5) eleven_____ 10) ninety_____

11) fifty three_____ 16) three_____

12) eighty nine_____ 17) seven_____

13) three hundred_____ 18) four_____

14) four thousand_____ 19) eight_____

15) two million_____ 20) nineteen_____

21) fourteen_____ 26) twenty nine_____

22) eighteen_____ 27) ninety one_____

23) thirty one_____ 28) one hundred two_____

24) sixty_____ 29) three thousand_____

25) forty one_____ 30) nine hundred sixty_____

31) ten_____ 36) twenty eight_____

32) nine_____ 37) twelve_____

33) sixteen_____ 38) twenty_____

34) sixty three_____ 39) ninety nine_____

35) twenty seven_____ 40) forty seven_____

41) twenty five thousand six hundred twenty three_____

42) thirty six thousand four hundred six_____

43) twenty million, three thousand twenty one_____

Set 1

Write the words which mean the same as these numerals.

1) 14 _____ 6) 23 _____

2) 5 _____ 7) 63 _____

3) 1 _____ 8) 86 _____

4) 7 _____ 9) 45 _____

5) 9 _____ 10) 74 _____

Set 2

Write the words which mean the same as these numerals.

11) 3 _____ 16) 107 _____

12) 25 _____ 17) 635 _____

13) 17 _____ 18) 564 _____

14) 6 _____ 19) 293 _____

15) 10 _____ 20) 452 _____

Set 3

Write the words which mean the same as these numerals.

21) 19 _____ 22) 10,302 _____

22) 2 _____ 23) 25 _____

23) 15 _____ 24) 9,672 _____

24) 8 _____ 25) 4,656 _____

25) 4 _____ 26) 324 _____

PLACE VALUE

Fill in the blanks to show the correct value.

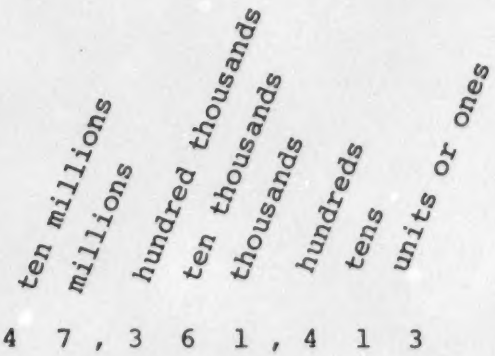
Example	THOUSANDS	HUNDREDS	TENS	ONES
1) 436		4	3	6
2) 57				
3) 1,435				
Group A				
1) 107				
2) 635				
3) 25				
4) 9				
5) 656				
Group B				
1) 5,190				
2) 2,934				
3) 9,743				
4) 8,672				
5) 243				
Group C				
1) 43,987				
2) 4,444				
3) 319				
4) 99				
5) 17				

CHAPTER TWO
Whole Numbers

I. AIM: To read whole numbers

II. METHOD:

Start with the first number on the right. This is called the units or ones place. The next number from the right is called the tens place. The third number from the right is called the hundreds place. Look at the picture below. It shows the names of the other places. Between the third number and the forth number there is a comma (,). This comma is read "thousands".



The above number is read: Forty seven million, three hundred sixty one thousand, four hundred thirteen.

VOCABULARY:
Units- first numeral on the right
Tens-- second numeral from the right
Hundreds-third numeral from the right
Thousand-fourth numeral from the right

Write the following numerals as word statements.

Group A		Group B		Group C	
1)	72	6)	90	11)	12
2)	59	7)	78	12)	82
3)	48	8)	38	13)	30
4)	61	9)	54	14)	67
5)	33	10)	69	15)	83

Group D		Group E		Group F	
16)	326	21)	284	26)	150
17)	117	22)	670	27)	843
18)	445	23)	849	28)	210
19)	281	24)	343	29)	429
20)	729	25)	908	30)	122

Group G		Group H		Group I	
31)	4,796	36)	6,151	41)	46,974
32)	2,084	37)	4,444	42)	74,802
33)	5,377	38)	2,232	43)	67,735
34)	7,586	39)	8,092	44)	56,857
35)	3,965	40)	1,303	45)	75,865

Group J		Group K		Group L	
46)	32,908	51)	479,647	56)	151,644
47)	23,222	52)	569,368	57)	949,742
48)	24,415	53)	345,327	58)	686,639
49)	33,428	54)	908,516	59)	425,736
50)	62,411	55)	142,238	60)	613,267

CHAPTER THREE

Rounding Whole Numbers

I. AIM: To round off whole numbers

II. METHOD:

1. Each numeral, when rounded off must have the same amount of zeros as the example.
2. If the numeral to be rounded is 0,1,2,3 or 4 you change it to zero and add nothing to the next number.
3. If the numeral to be rounded is 5, 6, 7, 8 or 9 you change the numeral to zero and add one to the next number.

III. EXAMPLE:

1. Round off:

   27 to the nearest 10:

   1) The first number on the right is 7
   2) Change it to 0
   3) Add 1 to the next number
   4) 2 plus 1 is 3
   5) There is only one zero in the example

   answer is 30

==========

2. Round off;

   436 to the nearest 100:

   1) The first number on the right is 6
   2) Change the 6 to a 0
   3) Add 1 to the next number
   4) 3 plus 1 is 4
   5) Change the 4 to a 0 add nothing to the next number
   6) 4 plus 0 is 4
   7) There is two zeros in the example.

   answer is 400

Round off to the nearest 10

1. 72 _____
2. 59 _____
3. 48 _____
4. 61 _____
5. 33 _____
6. 393 _____
7. 578 _____
8. 635 _____
9. 254 _____
10. 169 _____
11. 1,912 _____
12. 2,385 _____
13. 4,267 _____
14. 3,683 _____
15. 3,683 _____

Round off to the nearest 100

16. 671 _____
17. 285 _____
18. 850 _____
19. 344 _____
20. 309 _____
21. 6,272 _____
22. 1,186 _____
23. 6,151 _____
24. 4,444 _____
25. 8,092 _____
26. 4,697 _____
27. 7,480 _____
28. 6,773 _____
29. 5,685 _____
30. 7,586 _____

Round off to the nearest 1,000

31. 7,241 _____
32. 8,396 _____
33. 4,110 _____
34. 4,545 _____
35. 3,546 _____
36. 32,908 _____
37. 23,222 _____
38. 24,415 _____
39. 62,411 _____
40. 33,428 _____
41. 151,644 _____
42. 949,742 _____
43. 686,639 _____
44. 613,267 _____
45. 425,736 _____

CHAPTER FOUR
Addition of Whole Numbers

I. AIM: To add whole numbers.

II. METHOD:

1. When there are two or more columns, add the units first, then the tens, then the hundreds.
2. Remember, if the column adds to more than 10, write the numeral and add one to the next column.

III. EXAMPLE:

1. 72 + 393 + 9 =

72	72	72
393	393	393
9	9	9
4	74	474

VOCABULARY:

Column--numbers up and down
Line-- numbers across--side to side
Sum--total
Add-- plus--and
Integer--numeral- whole number

Add:

1) 5 + 3 =	2) 1 + 4 =	3) 5 + 3 =	4) 8 + 3 =	5) 2 + 8 =
6) 6 + 2 =	7) 9 + 3 =	8) 7 + 7 =	9) 7 + 9 =	10) 9 + 1 =
11) 4 + 1 =	12) 2 + 2 =	13) 6 + 1 =	14) 1 + 5 =	15) 4 + 3 =
16) 3 + 0 =	17) 5 + 4 =	18) 6 + 8 =	19) 6 + 4 =	20) 2 + 5 =
21) 8 + 9 =	22) 4 + 1 =	23) 3 + 5 =	24) 5 + 1 =	25) 0 + 1 =
26) 1 + 0 =	27) 2 + 2 =	28) 8 + 4 =	29) 8 + 2 =	30) 9 + 6 =
31) 8 + 6 =	32) 7 + 6 =	33) 9 + 0 =	34) 2 + 7 =	35) 7 + 3 =
36) 2 + 0 =	37) 9 + 7 =	38) 4 + 5 =	39) 3 + 4 =	40) 8 + 6 =

Add and Check:

1) 72 16	2) 26 53	3) 32 43	4) 35 64	5) 12 57
6) 80 11	7) 70 29	8) 28 31	9) 42 57	10) 83 16
11) 76 26	12) 23 58	13) 33 48	14) 34 36	15) 17 24
16) 12 65	17) 42 83	18) 52 27	19) 14 27	20) 26 65
21) 47 75	22) 52 69	23) 29 74	24) 35 86	25) 92 87
26) 73 17	27) 81 12	28) 77 27	29) 13 96	30) 47 76
31) 27 54	32) 71 30	33) 24 59	34) 43 66	35) 53 70

Add and check:

1) 3 5 4	2) 3 8 2	3) 4 1 3	4) 4 9 5	5) 7 8 9
6) 5 4 6	7) 5 6 6	8) 7 6 7	9) 3 6 1	10) 7 2 8
11) 72 16 26	12) 53 32 43	13) 35 64 12	14) 57 80 11	15) 70 29 28
16) 31 42 57	17) 83 16 76	18) 26 23 58	19) 33 48 34	20) 36 17 24
21) 4 5 3 3	22) 8 2 4 1	23) 3 4 9 5	24) 7 8 9 5	25) 5 6 6 7

Add and check:

1) 6	2) 7	3) 7	4) 5	5) 4
7	2	2	3	3
3	1	1	3	3
6	8	6	2	5
6) 3	7) 1	8) 5	9) 1	10) 2
5	2	7	7	9
6	5	8	2	2
4	7	1	1	8
11) 63	12) 71	13) 75	14) 51	15) 42
35	22	27	37	39
76	15	18	32	39
64	87	61	21	52
16) 37	17) 17	18) 55	19) 14	20) 26
52	22	73	73	39
61	51	83	23	79
48	76	12	15	24
21) 777	22) 658	23) 512	24) 822	25) 142
315	471	779	118	739

Add and check:

1)	253	2)	643	3)	435	4)	365	5)	578
	632		766		323		124		117
6)	3,136	7)	5,724	8)	6,617	9)	2,258	10)	3,436
	4,217		1,234		8,136		3,634		1,724
11)	3,344	12)	4,235	13)	8,918	14)	7,375	15)	8,176
	5,819		7,443		9,532		2,666		4,666
16)	712	17)	323	18)	581	19)	908	20)	817
	266		361		701		345		366
	534		542		722		127		225
21)	638	22)	312	23)	382	24)	578	25)	107
	343		674		241		955		245
	384		453		349		667		323
26)	2,536	27)	5,780	28)	1,323	29)	6,572	30)	8,343
	4,343		1,170		2,667		4,661		6,427
	5,365		1,246		1,236		7,225		1,436

Add and Check:

1)	3,631	2)	3,538	3)	3,453	4)	7,236	5)	8,416
	8,432		4,149		8,995		7,656		7,666
	2,171		4,724		1,382		8,176		3,497
6)	5,365	7)	4,149	8)	1,236	9)	1,463	10)	1,648
	43		11		266		46		302
	5		700		33		28		37
	491		26		3,562		656		3
11)	635	12)	42	13)	31	14)	162	15)	482
	3		291		662		17		2
	51		606		200		477		93
	353		3		9		7		222
16)	4	17)	3	18)	5	19)	8	20)	1
	3		4		1		7		3
	4		6		1		4		2
	3		6		7		1		2
	5		3		1		2		2
21)	3	22)	5	23)	2	24)	9	25)	6
	8		6		4		2		3
	5		7		9		1		2
	1		4		7		3		6
	9		2		5		8		1

Add and check:

1)	34	2)	53	3)	85	4)	18	5)	14
	43		14		71		37		43
	15		62		86		13		33
	46		72		62		44		76
	16		36		65		86		17
6)	34	7)	14	8)	14	9)	35	10)	66
	51		67		33		42		26
	87		86		65		16		25
	13		14		88		73		46
	14		37		14		33		17
	35		81		13		47		74
11)	143	12)	615	13)	878	14)	131	15)	341
	141		376		668		841		173
	414		337		566		884		417
	435		342		516		873		433
	347		566		226		625		346
	581		437		314		687		555
16)	6,341	17)	3,141	18)	3,414	19)	3,534	20)	5,743
	444		23		793		2,566		21
	5,321		286		8,246		200		111
	45		8		19		7,549		9,001
	3,789		2,581		470		3,692		5
	814		70		36		9,258		147

Add:

1) 4 + 3 + 5 =
2) 3 + 1 + 3 + 2 =
3) 4 + 3 + 7 + 2 =
4) 15 + 3 + 43 + 2 =
5) 23 + 13 + 10 + 9 + 17 =

6) 86 + 31 + 24 + 33 =
7) 22 + 67 + 72 + 61 =
8) 17 + 98 + 68 =
9) 34 + 6 + 27 =
10) 92 + 1 + 84 + 90 + 62 + 7 =

11) 78 + 75 + 283 + 721 =
12) 262 + 236 + 766 =
13) 19 + 536 + 100 + 953 + 708 =
14) 800 + 700 + 300 + 900 + 200 =
15) 668 + 845 + 733 =

16) 4,567 + 543 + 19 =
17) 3,291 + 68 + 23 + 3,678 + 1908 =
18) 23 + 4,890 + 3,789 + 741 + 8,529 =
19) 6,307 + 41 + 2,835 + 42 + 495 =
20) 663 + 70 + 778 + 491 + 9 + 8 =

21) 435 + 714 + 628 + 256 + 532 + 908 =
22) 662 + 511 + 755 + 22 + 1 =
23) 1 + 10 + 19 + 28 + 37 + 46 =
24) 61 + 70 + 79 + 88 + 97 + 106 + 115 =
25) 3,631 + 2,342 + 4,274 + 1,832 =

Add horizontally and vertically:

1)
$$\begin{array}{r} 4 + 3 + 5 = \\ 3 + 4 + 1 = \\ \hline + \quad + \quad = \end{array}$$

2)
$$\begin{array}{r} 4 + 6 + 1 = \\ 3 + 6 + 7 = \\ \hline + \quad + \quad = \end{array}$$

3)
$$\begin{array}{r} 6 + 7 + 7 = \\ 1 + 8 + 3 = \\ \hline + \quad + \quad = \end{array}$$

4)
$$\begin{array}{r} 9 + 3 + 2 = \\ 6 + 1 + 2 = \\ \hline + \quad + \quad = \end{array}$$

5)
$$\begin{array}{r} 4 + 3 + 4 + 3 = \\ 5 + 1 + 1 + 7 = \\ 7 + 3 + 8 + 1 = \\ \hline + \quad + \quad + \quad = \end{array}$$

6)
$$\begin{array}{r} 3 + 4 + 6 + 6 = \\ 6 + 7 + 9 + 1 = \\ 7 + 2 + 3 + 2 = \\ \hline + \quad + \quad + \quad = \end{array}$$

7)
$$\begin{array}{r} 43 + 34 + 6 = \\ 37 + 52 + 61 = \\ 57 + 13 + 18 = \\ 45 + 31 + 41 = \\ \hline + \quad + \quad = \end{array}$$

8)
$$\begin{array}{r} 63 + 75 + 76 = \\ 36 + 47 + 69 = \\ 67 + 72 + 12 = \\ 63 + 74 + 96 = \\ \hline + \quad + \quad = \end{array}$$

9)
$$\begin{array}{r} 1 + 2 + 3 + 4 + 5 = \\ 6 + 7 + 8 + 9 + 1 = \\ 2 + 3 + 4 + 5 + 6 = \\ 7 + 8 + 9 + 1 + 2 = \\ 3 + 4 + 5 + 6 + 7 = \\ \hline + \quad + \quad + \quad + \quad = \end{array}$$

10)
$$\begin{array}{r} 8 + 9 + 10 + 11 + 12 = \\ 13 + 14 + 15 + 16 + 17 = \\ 18 + 19 + 20 + 21 + 22 = \\ 23 + 24 + 25 + 26 + 27 = \\ 28 + 29 + 30 + 31 + 32 = \\ \hline + \quad + \quad + \quad + \quad = \end{array}$$

CHAPTER FIVE

Subtraction of Whole Numbers

AIM: To subtract whole numbers.

METHOD:

1. When there are two or more columns, subtract the units first, then the tens.
2. If the numeral in the subtrahend is larger then the numeral in the minuend, add 10 to the figure and take 1 away from the numeral in the next higher place.
3. Check by adding the remainder and the subtrahend.

EXAMPLE:

1.

Subtract		Check
5,186	-----minuend	2,438
- 2,438	-----subtrahend	+ 2,748
2,748	-----remainder	5,186

==========

2.

Subtract	Check
824	33
33	+ 791
791	824

VOCABULARY:

Minuend--the top number

Subtrahend--the bottom number

Remainder--the answer

Subtract--take the lower number from the higher number.

Subtract:

1) 5 − 3	2) 6 − 2	3) 4 − 1	4) 3 − 0	5) 4 − 2
6) 9 − 3	7) 2 − 2	8) 5 − 4	9) 5 − 3	10) 7 − 3
11) 5 − 2	12) 4 − 3	13) 9 − 1	14) 8 − 2	15) 6 − 4
16) 5 − 1	17) 9 − 7	18) 8 − 3	19) 8 − 6	20) 8 − 0
21) 11 − 0	22) 2 − 1	23) 9 − 8	24) 12 − 11	25) 3 − 2
26) 12 − 6	27) 18 − 7	28) 17 − 9	29) 19 − 8	30) 13 − 6
31) 13 − 6	32) 4 − 3	33) 15 − 7	34) 17 − 4	35) 5 − 5
36) 14 − 7	37) 5 − 3	38) 6 − 6	39) 18 − 2	40) 13 − 8

Subtract:

1) 15 − 0	2) 6 − 1	3) 16 − 2	4) 7 − 0	5) 13 − 1
6) 16 − 9	7) 7 − 3	8) 14 − 6	9) 19 − 5	10) 8 − 4
11) 53 − 2	12) 62 − 1	13) 47 − 5	14) 96 − 3	15) 57 − 4
16) 83 − 7	17) 79 − 9	18) 51 − 6	19) 64 − 7	20) 19 − 9
21) 35 − 12	22) 26 − 3	23) 74 − 52	24) 69 − 47	25) 75 − 23
26) 57 − 19	27) 83 − 26	28) 20 − 12	29) 68 − 49	30) 46 − 37
31) 21 − 3	32) 54 − 33	33) 43 − 26	34) 65 − 41	35) 32 − 11
36) 722 − 165	37) 632 − 343	38) 351 − 264	39) 807 − 110	40) 709 − 292

Subtract and check:

1) 762 265	2) 848 333	3) 341 302	4) 277 138	5) 324 236
6) 345 27	7) 817 66	8) 225 38	9) 343 84	10) 312 74
11) 453 74	12) 824 47	13) 349 50	14) 789 95	15) 566 67
16) 6,534 1,461	17) 2,263 1,299	18) 3,512 2,388	19) 6,480 4,546	20) 7,029 5,675
21) 7,628 20	22) 4,834 36	23) 2,771 47	24) 3,242 220	25) 3,127 21
26) 43,201 13,579	27) 66,432 44,172	28) 62,157 2,588	29) 90,400 8,621	
30) 58,010 3,001	31) 24,560 137	32) 52,313 4,324	33) 67,890 11,234	

Subtract and check:

1)	7,394 3,032	2)	3,398 221	3)	43,435 33,466	4)	51,171 28,740
5)	32,323 23,232	6)	86,134 24,680	7)	87,654 21,102	8)	43,435 34,410
9)	62,861 55,555	10)	32,101 21,099	11)	53,664 36,232	12)	71,291 52,302

13)	48 - 35 =	14)	66 - 28 =	15)	73 - 32 =
16)	75 - 51 =	17)	34 - 17 =	18)	341 - 117 =
19)	496 - 219 =	20)	643 - 106 =	21)	719 - 311 =
22)	899 - 399 =	23)	8,621 - 483 =	24)	3,001 - 628 =
25)	3,398 - 755 =	26)	2,110 - 551 =	27)	5,230 - 417 =
28)	5,399 - 399 =	29)	6,902 - 1,214 =	30)	9,999 - 9,999 =

CHAPTER SIX
Multiplication

I. AIM: To multiply whole numbers.

II. METHOD:

1. One numeral in multiplier;
   Multiply the multiplicand (top number) by the numeral in the multiplier. (Bottom number).
2. More than one numeral in the multiplier (bottom number);
   Multiply the multiplicand by each numeral in the nultiplier. Start with the numeral on the right.

III. EXAMPLE

Multiply

```
  43 ----- multiplicand
  23 ----- multiplier
 ----
 129
 86
 ----
 989 ----- product
```

Check

```
     43
23 ) 989
     92
     --
     69
     69
     --
      0
```

VOCABULARY:

multiplicand--the numeral you multiply (the top)

multiplier-- the numeral by which you multiply (the bottom)

product-- the answer

X -- multiplication sign (times)

twice--two times

Multiply:

1) 4 × 2	2) 9 × 3	3) 3 × 6	4) 7 × 5	5) 8 × 4
6) 3 × 0	7) 3 × 3	8) 1 × 2	9) 3 × 2	10) 3 × 4
11) 6 × 7	12) 2 × 2	13) 4 × 1	14) 1 × 7	15) 6 × 0
16) 1 × 2	17) 1 × 0	18) 0 × 8	19) 6 × 9	20) 8 × 5
21) 0 × 3	22) 5 × 4	23) 7 × 8	24) 4 × 8	25) 9 × 9
26) 6 × 7	27) 0 × 8	28) 9 × 1	29) 7 × 4	30) 7 × 2
31) 5 × 5	32) 6 × 1	33) 7 × 6	34) 3 × 4	35) 2 × 7
36) 2 × 3	37) 5 × 3	38) 8 × 1	39) 6 × 6	40) 0 × 9

Multiply:

1) 0 × 7	2) 8 × 6	3) 5 × 9	4) 5 × 2	5) 4 × 1
6) 9 × 3	7) 5 × 4	8) 8 × 4	9) 7 × 5	10) 6 × 5
11) 49 × 3	12) 37 × 6	13) 83 × 5	14) 31 × 0	15) 33 × 4
16) 24 × 5	17) 16 × 7	18) 11 × 0	19) 58 × 2	20) 57 × 0
21) 93 × 3	22) 78 × 7	23) 33 × 0	24) 13 × 9	25) 36 × 8
26) 41 × 1	27) 61 × 6	28) 10 × 7	29) 80 × 8	30) 74 × 1
31) 49 × 2	32) 96 × 2	33) 60 × 2	34) 97 × 5	35) 32 × 8
36) 75 × 6	37) 73 × 9	38) 25 × 3	39) 86 × 4	40) 61 × 9

Multiply and check:

1) 77 × 2	2) 67 × 1	3) 22 × 0	4) 58 × 3	5) 85 × 9
6) 54 × 4	7) 55 × 2	8) 49 × 3	9) 95 × 2	10) 87 × 4
11) 54 × 3	12) 58 × 7	13) 76 × 8	14) 23 × 4	15) 68 × 7
16) 36 × 7	17) 65 × 1	18) 33 × 3	19) 24 × 6	20) 16 × 4
21) 493 × 3	22) 376 × 6	23) 835 × 5	24) 310 × 0	25) 334 × 4
26) 245 × 5	27) 167 × 7	28) 110 × 0	29) 682 × 2	30) 570 × 0
31) 933 × 3	32) 787 × 7	33) 330 × 0	34) 139 × 9	35) 368 × 8
36) 411 × 1	37) 612 × 6	38) 107 × 7	39) 808 × 8	40) 741 × 1

Multiply and check:

1)	1,393 × 6	2)	6,841 × 3	3)	1,612 × 2	4)	8,808 × 1	5)	1,106 × 8
6)	4,996 × 5	7)	2,379 × 2	8)	7,767 × 6	9)	5,885 × 9	10)	2,275 × 7
11)	68,934 × 2	12)	73,927 × 5	13)	27,522 × 7	14)	66,775 × 3		
15)	49 × 37	16)	83 × 31	17)	31 × 33	18)	24 × 16	19)	11 × 68
20)	68 × 57	21)	93 × 78	22)	33 × 13	23)	36 × 41	24)	61 × 10
25)	49 × 96	26)	60 × 97	27)	32 × 75	28)	73 × 25	29)	86 × 61
30)	77 × 67	31)	22 × 58	32)	85 × 54	33)	55 × 54	34)	49 × 95
35)	493 × 37	36)	833 × 32	37)	311 × 11	38)	246 × 86	39)	687 × 79

Multiply and check:

1) 499 67	2) 607 52	3) 322 55	4) 736 51	5) 866 24
6) 493 161	7) 783 574	8) 313 496	9) 362 977	10) 241 516
11) 8,499 271	12) 6,073 324	13) 7,368 514	14) 2,738 216	15) 2,586 691
16) 49,337 933	17) 68,353 787	18) 10,334 530	19) 24,516 139	
20) 71,106 368	21) 6,011 5,722	22) 7,808 5,885	23) 2,161 7,677	
24) 1,486 9,732	25) 3,931 6,994	26) 33,133 8,739	27) 16,012 6,142	
28) 77,906 9,475	29) 60,852 2,376	30) 85,956 4,558	31) 49,952 16,178	

Multiply and check:

1) 37 X 78 =
2) 85 X 554 =
3) 24 X 1,066 =
4) 33 X 25,860 =
5) 201 X 342 =

6) 6 X 3 X 2 =
7) 9 X 7 X 1 =
8) 6 X 9 X 3 =
9) 14 X 2 X 12 =
10) 200 X 100 =

11) 6 X 1 X 3 X 2 =
12) 3 X 2 X 2 X 3 =
13) 461 X 112 X 294 =
14) 7,328 X 5,749 =
15) 9,635 X 4,721 =

16) 23 X 41 X 17 =
17) 49 X 342 =
18) 917 X 2 =
19) 436 X 219 =
20) 461 X 23 =

CHAPTER SEVEN

Division of whole numbers

I. AIM: To divide whole numbers.

II. METHOD:

1. Divide the divisor into the dividend.
2. Multiply the whole divisor by this quotient.
3. Write the product under the dividend used.
4. Subtract this product.
5. Use this sum.
6. If the dividend is more than one number, bring down the next numeral and put it next to the remainder.
7. Repeat using the remainder instead of the divisor.
8. Go to steps 2, 3, 4, and 5 until finished.
9. To check example, multiply the quotient by the divisor.

III. EXAMPLE

1. Divide 6 by 3

2 -----quotient

divisor--- 3 ⟌ 6 -----dividend

$$3\overline{)6}\quad 2,\ 6,\ 0$$

Check:

$2 \times 3 = 6$

==========

2. Divide 84 by 4

Check:

$$4\overline{)84}\quad 21,\ 8,\ 4,\ 4,\ 0$$

$2 \times 4 = 8$

$1 \times 4 = 4$

$$\begin{array}{r} 21 \\ \times\ 4 \\ \hline 84 \end{array}$$

==========

VOCABULARY:

Quotient-- answer

Dividend-- the number to be divided

Divisor--- the number that goes into the dividend.

Divide and check:

1) $6\overline{)24}$	2) $7\overline{)28}$	3) $3\overline{)12}$	4) $4\overline{)12}$	5) $2\overline{)14}$
6) $8\overline{)40}$	7) $5\overline{)35}$	8) $9\overline{)36}$	9) $8\overline{)48}$	10) $6\overline{)54}$
11) $3\overline{)12}$	12) $8\overline{)64}$	13) $7\overline{)42}$	14) $4\overline{)24}$	15) $7\overline{)49}$
16) $8\overline{)64}$	17) $7\overline{)21}$	18) $5\overline{)30}$	19) $3\overline{)42}$	20) $9\overline{)72}$
21) $5\overline{)40}$	22) $7\overline{)54}$	23) $2\overline{)36}$	24) $6\overline{)18}$	25) $9\overline{)27}$
26) $6\overline{)30}$	27) $3\overline{)21}$	28) $7\overline{)35}$	29) $2\overline{)64}$	30) $3\overline{)15}$
31) $2\overline{)14}$	32) $5\overline{)25}$	33) $4\overline{)48}$	34) $2\overline{)28}$	35) $8\overline{)72}$
36) $8\overline{)16}$	37) $2\overline{)48}$	38) $1\overline{)6}$	39) $7\overline{)14}$	40) $9\overline{)45}$
41) $2\overline{)24}$	42) $1\overline{)43}$	43) $4\overline{)96}$	44) $3\overline{)42}$	45) $6\overline{)246}$
46) $7\overline{)497}$	47) $7\overline{)777}$	48) $4\overline{)484}$	49) $2\overline{)248}$	
50) $5\overline{)655}$	51) $6\overline{)306}$	52) $3\overline{)666}$	53) $9\overline{)999}$	
54) $7\overline{)427}$	55) $3\overline{)363}$	56) $8\overline{)272}$	57) $5\overline{)600}$	

Divide and check:

1) $2\overline{)24,680}$ 2) $3\overline{)36,912}$ 3) $4\overline{)4,812}$ 4) $5\overline{)51,015}$

5) $6\overline{)61,224}$ 6) $2\overline{)8,288}$ 7) $7\overline{)14,287}$ 8) $8\overline{)3,232}$

9) $9\overline{)4,509}$ 10) $1\overline{)43,620}$ 11) $3\overline{)1,437}$ 12) $4\overline{)2,076}$

13) $5\overline{)8,630}$ 14) $9\overline{)56,169}$ 15) $8\overline{)5,912}$ 16) $1\overline{)36,421}$

17) $2\overline{)53,246}$ 18) $6\overline{)24,972}$ 19) $3\overline{)2,472}$ 20) $7\overline{)36,561}$

CHAPTER EIGHT

Reducing Fractions to their lowest terms

I. AIM: To reduce fractions to their lowest terms.

II. METHOD:

Find the largest number that will go into the numerator and denominator evenly.

III. EXAMPLE

1. reduce $\frac{6}{9}$ -----numerator
-----denominator

$$\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$$

==========

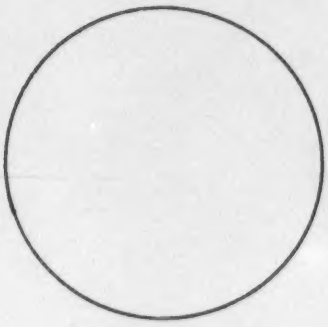
2. reduce $\frac{4}{12}$

$$\frac{4}{12} = \frac{4 \div 4}{12 \div 4} = \frac{1}{3}$$

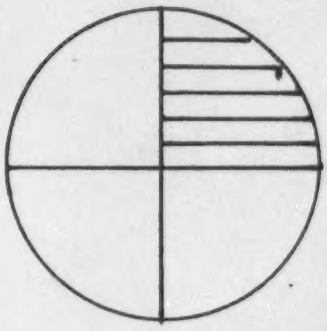
==========

VOCABULARY:

Numerator--top number
denominator--bottom number
lowest-- smallest
fraction--part of a whole thing
reduce--to make smaller
unlike fraction--belonging to a different family
like fraction--belonging to the same family
equal--the same



whole- complete



fraction--to break
the whole into parts

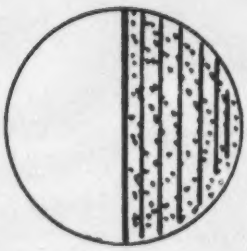
$\frac{1}{4}$ ----numerator--counts the parts
$\frac{1}{4}$ ----denominator-names the fraction

==========

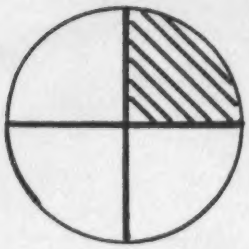
Fraction Words

one-half	$\frac{1}{2}$	one-seventh	$\frac{1}{7}$
one-third	$\frac{1}{3}$	one-eighth	$\frac{1}{8}$
one-fourth	$\frac{1}{4}$	one-ninth	$\frac{1}{9}$
one-fifth	$\frac{1}{5}$	one-tenth	$\frac{1}{10}$
one-sixth	$\frac{1}{6}$		

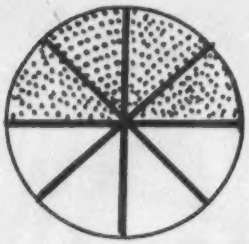
Write the proper fraction for the shaded part.

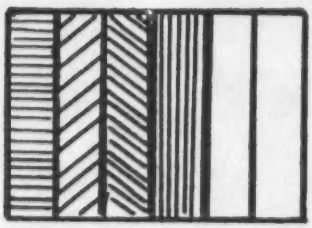


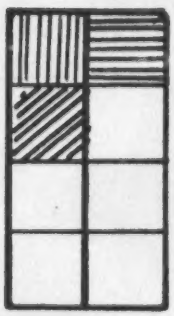
$\frac{1}{2}$

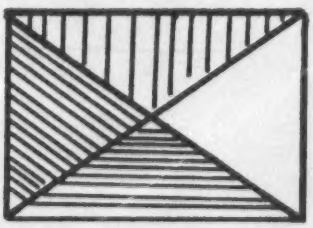


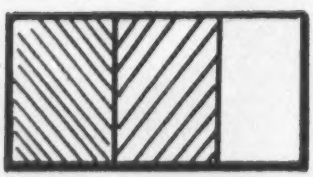
$\frac{1}{4}$

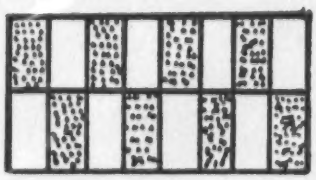


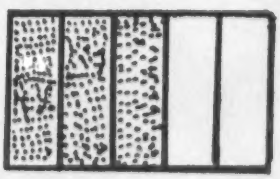




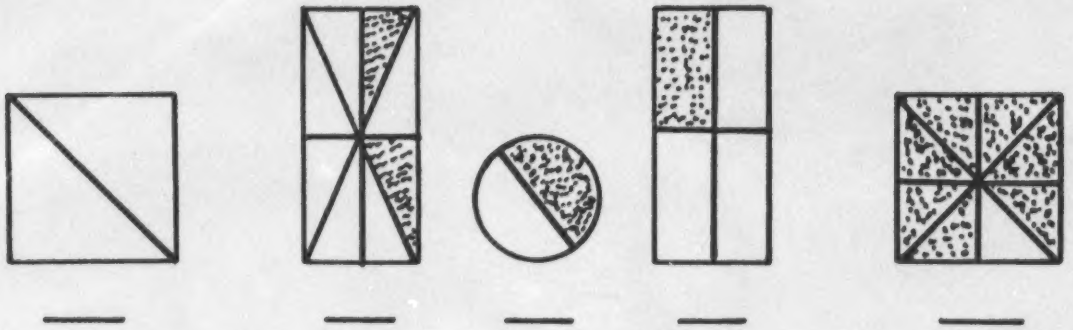


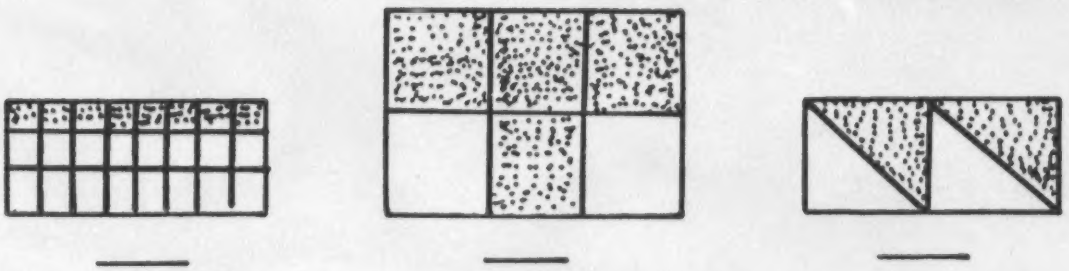


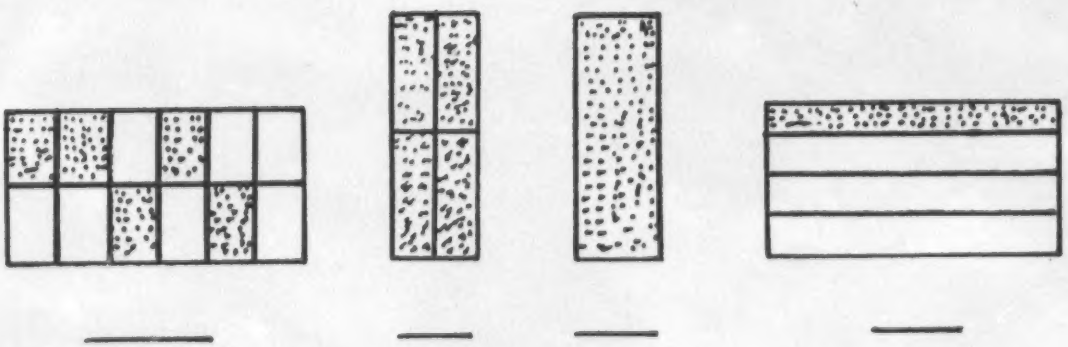


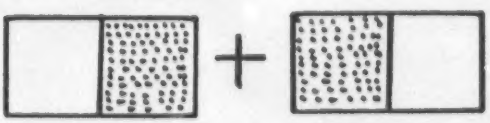


Write the proper fraction for the shaded parts.









— + — = —

Reduce to the lowest terms:

1) $\frac{3}{6} =$ 2) $\frac{4}{16} =$ 3) $\frac{3}{12} =$ 4) $\frac{5}{15} =$ 5) $\frac{4}{8} =$

6) $\frac{6}{12} =$ 7) $\frac{3}{15} =$ 8) $\frac{5}{40} =$ 9) $\frac{2}{4} =$ 10) $\frac{4}{12} =$

11) $\frac{7}{35} =$ 12) $\frac{7}{14} =$ 13) $\frac{2}{10} =$ 14) $\frac{8}{40} =$ 15) $\frac{5}{35} =$

16) $\frac{4}{20} =$ 17) $\frac{3}{21} =$ 18) $\frac{6}{24} =$ 19) $\frac{9}{36} =$ 20) $\frac{8}{48} =$

21) $\frac{4}{28} =$ 22) $\frac{3}{24} =$ 23) $\frac{9}{27} =$ 24) $\frac{6}{54} =$ 25) $\frac{8}{64} =$

26) $\frac{8}{20} =$ 27) $\frac{7}{21} =$ 28) $\frac{2}{12} =$ 29) $\frac{9}{36} =$ 30) $\frac{8}{54} =$

31) $\frac{6}{24} =$ 32) $\frac{7}{28} =$ 33) $\frac{3}{12} =$ 34) $\frac{4}{12} =$ 35) $\frac{2}{14} =$

36) $\frac{8}{40} =$ 37) $\frac{5}{35} =$ 38) $\frac{9}{36} =$ 39) $\frac{8}{48} =$ 40) $\frac{6}{54} =$

CHAPTER NINE

Changing Improper Fractions

I. AIM: To change an improper fraction to a whole number or a mixed number.

II. METHOD:

1. Divide the numerator by the denominator.
2. Write the remainder, if any, as a fraction reduced to its lowest terms.

III. EXAMPLE.

1. Change $\frac{8}{4}$ to a whole number.

How many times can the bottom number go into the top number?

$$\frac{8}{4} = 2$$

==========

2. Change $\frac{7}{4}$ to a mixed number.

How many times can the bottom number go into the top number?

$$\frac{7}{4} = 1\frac{3}{4}$$

VOCABULARY:

proper fraction--less than one
improper fraction--more than one.
numerator--top number
denominator--bottom number
mixed number--contains a whole number and a fraction

Reduce to the lowest terms:

1) $\frac{7}{7} =$ 2) $\frac{6}{6} =$ 3) $\frac{5}{2} =$ 4) $\frac{6}{4} =$ 5) $\frac{7}{6} =$

6) $\frac{4}{3} =$ 7) $\frac{7}{5} =$ 8) $\frac{8}{2} =$ 9) $\frac{5}{4} =$ 10) $\frac{8}{3} =$

11) $\frac{4}{2} =$ 12) $\frac{13}{8} =$ 13) $\frac{8}{7} =$ 14) $\frac{18}{3} =$ 15) $\frac{8}{6} =$

16) $\frac{8}{4} =$ 17) $\frac{15}{5} =$ 18) $\frac{7}{4} =$ 19) $\frac{36}{9} =$ 20) $\frac{8}{8} =$

21) $\frac{14}{9} =$ 22) $\frac{6}{2} =$ 23) $\frac{11}{6} =$ 24) $\frac{16}{2} =$ 25) $\frac{8}{5} =$

26) $\frac{4}{3} =$ 27) $\frac{12}{5} =$ 28) $\frac{8}{3} =$ 29) $\frac{9}{2} =$ 30) $\frac{12}{6} =$

31) $\frac{4}{2} =$ 32) $\frac{9}{5} =$ 33) $\frac{6}{2} =$ 34) $\frac{8}{5} =$ 35) $\frac{11}{4} =$

36) $\frac{5}{2} =$ 37) $\frac{5}{3} =$ 38) $\frac{10}{6} =$ 39) $\frac{6}{3} =$ 40) $\frac{7}{5} =$

CHAPTER TEN

Mixed Numbers

I. AIM: To change mixed numbers to simplest form.

II. METHOD:

1. Simplify the fraction
2. Add the result to the whole number if possible.

III. EXAMPLE

1. Simplify $5\frac{3}{3}$ $\quad \frac{3}{3} = 1 \quad 5 + 1 = 6$

2. Simplify $8\frac{3}{6}$ $\quad \frac{3}{6} = \frac{1}{2} \quad 8 + \frac{1}{2} = 8\frac{1}{2}$

3. Simplify $4\frac{10}{3}$ $\quad \frac{10}{3} = 3\frac{1}{3} \quad 3\frac{1}{3} + 4 = 7\frac{1}{3}$

4. Simplify $3\frac{6}{4}$ $\quad \frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2} \quad 1\frac{1}{2} + 3 = 4\frac{1}{2}$

Reduce the mixed numbers:

1) $3\frac{6}{3}$ 2) $16\frac{16}{4}$ 3) $22\frac{12}{3}$ 4) $24\frac{15}{5}$ 5) $19\frac{8}{4}$

6) $9\frac{12}{6}$ 7) $17\frac{15}{3}$ 8) $12\frac{40}{5}$ 9) $14\frac{4}{2}$ 10) $27\frac{12}{4}$

11) $4\frac{35}{7}$ 12) $41\frac{14}{7}$ 13) $21\frac{10}{2}$ 14) $33\frac{40}{8}$ 15) $7\frac{35}{5}$

16) $12\frac{20}{4}$ 17) $2\frac{21}{3}$ 18) $42\frac{24}{6}$ 19) $1\frac{36}{9}$ 20) $4\frac{48}{8}$

21) $5\frac{28}{4}$ 22) $3\frac{24}{3}$ 23) $18\frac{27}{9}$ 24) $10\frac{54}{6}$ 25) $30\frac{64}{8}$

26) $29\frac{20}{8}$ 27) $62\frac{21}{7}$ 28) $7\frac{12}{2}$ 29) $47\frac{36}{9}$ 30) $6\frac{54}{8}$

31) $6\frac{20}{9}$ 32) $53\frac{7}{3}$ 33) $9\frac{10}{3}$ 34) $8\frac{16}{5}$ 35) $5\frac{17}{9}$

36) $15\frac{22}{7}$ 37) $3\frac{17}{5}$ 38) $7\frac{11}{4}$ 39) $43\frac{12}{6}$ 40) $4\frac{18}{8}$

CHAPTER ELEVEN

Changing Fractions to Higher Terms

I. AIM: To change a fraction to a higher term

II. METHOD:

1. Divide the new denominator by the original denominator.
2. Take the answer and multiply it by the original numerator.

III. EXAMPLE:

1. $\frac{1}{2} = \frac{\quad}{32}$ 32 divided by 2 equals 16

$$\frac{1}{2} = \frac{1}{2} \times \frac{16}{16} = \frac{16}{32}$$

==========

2. $\frac{4}{5} = \frac{\quad}{20}$ 20 divided by 5 equals 4

$$\frac{4}{5} = \frac{4}{5} \times \frac{4}{4} = \frac{16}{20}$$

==========

3. $\frac{6}{13} = \frac{\quad}{26}$ 26 divided by 13 equals 2

$$\frac{6}{13} = \frac{6}{13} \times \frac{2}{2} = \frac{12}{26}$$

VOCABULARY:

Equivalent fractions: have different forms but same value.

Change the following fractions to their equivalents.

1) $\frac{1}{2} = \frac{\quad}{22}$ 2) $\frac{1}{3} = \frac{\quad}{30}$ 3) $\frac{1}{4} = \frac{\quad}{24}$ 4) $\frac{1}{5} = \frac{\quad}{40}$ 5) $\frac{1}{6} = \frac{\quad}{18}$

6) $\frac{1}{7} = \frac{\quad}{28}$ 7) $\frac{1}{8} = \frac{\quad}{64}$ 8) $\frac{1}{9} = \frac{\quad}{18}$ 9) $\frac{1}{10} = \frac{\quad}{40}$ 10) $\frac{2}{3} = \frac{\quad}{9}$

11) $\frac{3}{3} = \frac{\quad}{6}$ 12) $\frac{2}{4} = \frac{\quad}{12}$ 13) $\frac{3}{4} = \frac{\quad}{16}$ 14) $\frac{2}{5} = \frac{\quad}{10}$ 15) $\frac{5}{6} = \frac{\quad}{24}$

16) $\frac{3}{5} = \frac{\quad}{25}$ 17) $\frac{5}{7} = \frac{\quad}{21}$ 18) $\frac{2}{8} = \frac{\quad}{32}$ 19) $\frac{3}{10} = \frac{\quad}{30}$ 20) $\frac{5}{11} = \frac{\quad}{44}$

21) $\frac{4}{5} = \frac{\quad}{50}$ 22) $\frac{3}{6} = \frac{\quad}{36}$ 23) $\frac{2}{9} = \frac{\quad}{27}$ 24) $\frac{4}{11} = \frac{\quad}{22}$ 25) $\frac{3}{12} = \frac{\quad}{48}$

26) $\frac{4}{6} = \frac{\quad}{24}$ 27) $\frac{6}{7} = \frac{\quad}{28}$ 28) $\frac{6}{9} = \frac{\quad}{36}$ 29) $\frac{4}{10} = \frac{\quad}{30}$ 30) $\frac{9}{12} = \frac{\quad}{48}$

31) $\frac{6}{8} = \frac{\quad}{48}$ 32) $\frac{3}{9} = \frac{\quad}{27}$ 33) $\frac{2}{11} = \frac{\quad}{33}$ 34) $\frac{2}{12} = \frac{\quad}{48}$ 35) $\frac{6}{13} = \frac{\quad}{26}$

CHAPTER TWELVE

Finding Lowest Common Denominator (L.C.D.)

I.AIM: Taking unlike fractions and finding the lowest common denominator.

II. METHOD:

1. Find the lowest numeral that can be divided evenly by each of the denominators.
2. Multiply this numeral by the numerator .

III. EXAMPLE:

1. Find the L.C.D. of $\frac{1}{4}$ and $\frac{2}{8}$

8 is the lowest number that both 4 and 8 can go into evenly.

$$\frac{1}{4} = \frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$$

$$\frac{2}{8} = \frac{2}{8} \times \frac{1}{1} = \frac{2}{8}$$

The L.C.D. is 8

==========

2. Find the L.C.D. of $\frac{2}{5}$ and $\frac{1}{10}$

10 is the lowest number that both 5 and 10 can go into evenly.

$$\frac{2}{5} = \frac{2}{5} \times \frac{2}{2} = \frac{4}{10}$$

$$\frac{1}{10} = \frac{1}{10} \times \frac{1}{1} = \frac{1}{10}$$

The L.C.D. is 10

VOCABULARY:

L.C.D.--Lowest common denominator: The lowest number that can be divided evenly by each of the denominators.

Find the L.C.D.

1) $\frac{1}{3}$ and $\frac{1}{6}$

2) $\frac{3}{4}$ and $\frac{1}{8}$

3) $\frac{1}{2}$ and $\frac{1}{12}$

4) $\frac{5}{6}$ and $\frac{2}{3}$

5) $\frac{1}{4}$ and $\frac{1}{2}$

6) $\frac{2}{3}$ and $\frac{5}{6}$

7) $\frac{5}{6}$ and $\frac{1}{12}$

8) $\frac{1}{3}$ and $\frac{1}{2}$

9) $\frac{2}{5}$ and $\frac{5}{6}$

10) $\frac{1}{4}$ and $\frac{1}{6}$

11) $\frac{1}{2}$ and $\frac{2}{3}$

12) $\frac{3}{4}$ and $\frac{1}{2}$

13) $\frac{4}{5}$ and $\frac{2}{3}$

14) $\frac{1}{6}$ and $\frac{2}{9}$

15) $\frac{5}{9}$ and $\frac{2}{6}$

16) $\frac{1}{2}$ and $\frac{1}{6}$

17) $\frac{1}{2}$ and $\frac{3}{4}$

18) $\frac{2}{3}$ and $\frac{3}{5}$

Find the L.C.D.

1) $\frac{3}{5}$ and $\frac{1}{2}$

2) $\frac{5}{6}$ and $\frac{1}{4}$

3) $\frac{1}{2}$ and $\frac{2}{5}$

4) $\frac{1}{3}$ and $\frac{2}{7}$

5) $\frac{1}{4}$ and $\frac{2}{9}$

6) $\frac{1}{5}$ and $\frac{2}{3}$

7) $\frac{1}{6}$ and $\frac{1}{4}$

8) $\frac{1}{7}$ and $\frac{2}{21}$ and

9) $\frac{1}{8}$ and $\frac{5}{6}$

10) $\frac{1}{9}$ and $\frac{5}{6}$

11) $\frac{1}{10}$ and $\frac{4}{15}$

12) $\frac{1}{11}$ and $\frac{2}{33}$

13) $\frac{2}{3}$ and $\frac{1}{2}$

14) $\frac{2}{4}$ and $\frac{3}{5}$

15) $\frac{3}{4}$ and $\frac{1}{6}$

16) $\frac{2}{5}$ and $\frac{5}{6}$

17) $\frac{3}{5}$ and $\frac{2}{7}$

18) $\frac{4}{5}$ and $\frac{3}{4}$

CHAPTER THIRTEEN

Addition of Fractions and mixed numbers

I. AIM: To add fractions and mixed numbers

II. METHOD:

1. To add like fractions: bring down the denominators and add the numerators. Reduce answer to lowest form.
2. To add unlike fractions: find the L.C.D. (lowest common denominator) and change the fractions to their equivalent then follow step 1
3. To add mixed numbers: add the fractions first then the whole number.

III. EXAMPLE

1. Like fractions

$$\begin{array}{r} \frac{2}{5} \\ \frac{1}{5} \\ \hline \frac{3}{5} \end{array}$$

2. Like fractions

$$\begin{array}{r} \frac{3}{8} \\ \frac{3}{8} \\ \hline \frac{6}{8} = \frac{3}{4} \end{array}$$

==========

3. Like fractions

$$\begin{array}{r} \frac{7}{9} \\ \frac{4}{9} \\ \hline \frac{11}{9} = 1\frac{2}{9} \end{array}$$

4. Unlike fractions

$$\begin{array}{rr} \frac{2}{3} & \frac{6}{9} \\ \frac{7}{9} & \frac{7}{9} \\ \hline & \frac{13}{9} = 1\frac{4}{9} \end{array}$$

==========

Example

5. Mixed number

$$3\frac{2}{3} = \frac{4}{6}$$

$$2\frac{5}{6} = \frac{5}{6}$$

$$5 \qquad \frac{9}{6} = 1\frac{3}{6} = 1\frac{1}{2}$$

$$1\frac{1}{2}$$

$$6\frac{1}{2}$$

6. Mixed number

$$5$$

$$6\frac{2}{3}$$

$$11\frac{2}{3}$$

Add:

1) $\frac{2}{4} + \frac{1}{4} =$

2) $\frac{1}{5} + \frac{3}{5} =$

3) $\frac{3}{6} + \frac{1}{6} =$

4) $\frac{5}{9} + \frac{2}{9} =$

5) $\frac{3}{7} + \frac{1}{7} =$

6) $\frac{1}{4} + \frac{1}{4} =$

7) $\frac{2}{7} + \frac{2}{7} =$

8) $\frac{2}{5} + \frac{2}{5} =$

9) $\frac{4}{9} + \frac{4}{9} =$

10) $\frac{3}{7} + \frac{4}{7} =$

11) $\frac{1}{3} + \frac{1}{3} =$

12) $\frac{2}{5} + \frac{2}{5} =$

13) $\frac{3}{7} + \frac{3}{7} =$

14) $\frac{4}{9} + \frac{4}{9} =$

15) $\frac{5}{11} + \frac{5}{11} =$

16) $\frac{3}{13} + \frac{4}{13} =$

17) $\frac{5}{15} + \frac{6}{15} =$

18) $\frac{7}{17} + \frac{8}{17} =$

19) $\frac{3}{13} + \frac{4}{13} =$

20) $\frac{5}{12} + \frac{5}{12} =$

Add:

1) $\frac{2}{7} + \frac{2}{3}$

2) $\frac{6}{7} + \frac{5}{6}$

3) $\frac{5}{8} + \frac{2}{3}$

4) $\frac{3}{9} + \frac{1}{2}$

5) $\frac{7}{9} + \frac{1}{2}$

6) $\frac{1}{7} + \frac{3}{21}$

7) $\frac{1}{8} + \frac{5}{6}$

8) $\frac{1}{9} + \frac{5}{6}$

9) $\frac{1}{10} + \frac{4}{15}$

10) $\frac{1}{11} + \frac{2}{33}$

11) $\frac{2}{3} + \frac{5}{6}$

12) $\frac{5}{6} + \frac{1}{12}$

13) $\frac{1}{3} + \frac{1}{2}$

14) $\frac{2}{5} + \frac{5}{6}$

15) $\frac{1}{4} + \frac{1}{6}$

16) $\frac{1}{2} + \frac{2}{3}$

17) $\frac{3}{4} + \frac{1}{2}$

18) $\frac{4}{5} + \frac{2}{3}$

19) $\frac{3}{6} + \frac{2}{9}$

20) $\frac{5}{9} + \frac{2}{6}$

Add:

1) $\frac{2}{4} + \frac{1}{4} + \frac{1}{4} =$

2) $\frac{1}{3} + \frac{2}{6} + \frac{2}{4} =$

3) $\frac{3}{6} + \frac{2}{3} + \frac{1}{8} =$

4) $\frac{2}{3} + \frac{5}{6} + \frac{3}{8} =$

5) $\frac{3}{4} + \frac{2}{3} + \frac{5}{6} =$

6) $\frac{2}{5} + \frac{2}{3} + \frac{3}{5} =$

7) $\frac{4}{6} + \frac{2}{3} + \frac{3}{5} =$

8) $\frac{1}{2} + \frac{3}{10} + \frac{4}{5} =$

9) $\frac{3}{4} + \frac{7}{12} + \frac{2}{6} =$

10) $\frac{5}{8} + \frac{2}{4} + \frac{2}{3} =$

11) $\frac{5}{6} = \frac{3}{}$

12) $\frac{5}{7} = \frac{2}{}$

13) $\frac{2}{3} = \frac{10}{}$

14) $\frac{11}{15} = \frac{9}{}$

15) $5\frac{2}{3} = \frac{6}{}$

16) $11\frac{7}{12} = \frac{3}{}$

17) $24\frac{5}{9} = \frac{7}{}$

18) $17\frac{2}{5} = \frac{2}{}$

Add:

1) $4\frac{1}{8}$ + $8\frac{2}{6}$

2) $3\frac{3}{4}$ + $5\frac{1}{6}$

3) $2\frac{3}{4}$ + $4\frac{5}{6}$

4) $3\frac{2}{5}$ + $7\frac{3}{10}$

5) $12\frac{3}{5}$ + $6\frac{1}{2}$

6) $5\frac{4}{8}$ + $6\frac{5}{6}$

7) $23\frac{1}{4}$ + $7\frac{1}{3}$

8) $4\frac{7}{8}$ + $19\frac{9}{16}$

9) $3\frac{7}{12}$ + $\frac{3}{8}$ + $4\frac{1}{6}$

10) $14\frac{1}{4}$ + $2\frac{2}{4}$ + $\frac{1}{4}$

11) $5\frac{1}{3}$ + $3\frac{2}{4}$ + $9\frac{2}{6}$

12) $4\frac{1}{8}$ + $2\frac{2}{3}$ + $3\frac{3}{6}$

13) $2\frac{3}{8}$ + $7\frac{2}{4}$ + $4\frac{2}{3}$

14) $24\frac{2}{6}$ + $2\frac{7}{12}$ + $7\frac{3}{4}$

15) $3\frac{3}{5}$ + $11\frac{2}{10}$ + $6\frac{1}{2}$

16) $9\frac{4}{5}$ + $10\frac{1}{3}$ + $2\frac{5}{6}$

CHAPTER FOURTEEN

Comparing Fractions

I. AIM: To compare fractions

II. METHOD:

1. Change fractions to common denominator
2. Compare the numerators.
   When the denominators are the same look at the numerators. The larger the number the larger the fraction.

III. EXAMPLE:

1. Which is larger? $\frac{3}{5}$ or $\frac{2}{3}$

   Find the number that 5 and 3 can go into evenly

   $\frac{3}{5} = \frac{9}{15}$

   $\frac{2}{3} = \frac{10}{15}$ answer: $\frac{2}{3}$ is larger

==========

2. Arrange is ascending order (smallest one first)

   $\frac{3}{4}$ $\frac{5}{6}$ $\frac{2}{3}$ Find the number that 4, 6 and 3 can go into evenly.

   $\frac{3}{4} = \frac{9}{12}$

   $\frac{5}{6} = \frac{10}{12}$

   $\frac{2}{3} = \frac{8}{12}$ answer $\frac{2}{3}$ $\frac{3}{4}$ $\frac{5}{6}$

VOCABULARY:

increase--to make larger

decrease--to make smaller

is greater than-- >

is less than -- <

Which is larger?

1) $\frac{2}{3}$ or $\frac{2}{6}$

2) $\frac{4}{6}$ or $\frac{2}{4}$

3) $\frac{2}{3}$ or $\frac{5}{6}$

4) $\frac{4}{5}$ or $\frac{3}{4}$

5) $\frac{1}{5}$ or $\frac{1}{8}$

6) $\frac{2}{5}$ or $\frac{3}{10}$

7) $\frac{2}{3}$ or $\frac{3}{5}$

8) $\frac{3}{4}$ or $\frac{7}{12}$

9) $\frac{5}{8}$ or $\frac{2}{3}$

Arrange in ascending order (smallest one first)

10) $\frac{1}{3}$ $\frac{2}{6}$ $\frac{2}{4}$

11) $\frac{3}{4}$ $\frac{2}{3}$ $\frac{5}{6}$

12) $\frac{2}{5}$ $\frac{2}{3}$ $\frac{3}{4}$

13) $\frac{3}{6}$ $\frac{2}{3}$ $\frac{1}{8}$

14) $\frac{4}{6}$ $\frac{2}{3}$ $\frac{3}{5}$

15) $\frac{1}{2}$ $\frac{3}{10}$ $\frac{4}{5}$

16) $\frac{2}{3}$ $\frac{5}{6}$ $\frac{3}{8}$

17) $\frac{3}{4}$ $\frac{7}{12}$ $\frac{2}{6}$

18) $\frac{2}{3}$ $\frac{2}{4}$ $\frac{5}{8}$

CHAPTER FIFTEEN

Changing mixed numbers to improper Fraction

I. AIM: To change a mixed number to an improper fraction.

II. METHOD:

1. Multiply the whole number by the denominator.
2. Add the numerator of the fraction to this answer.
3. Write the answer over the denominator.

III. EXAMPLE:

1. Change $2\frac{3}{5}$ to an improper fraction

Multiply the whole number 2 by the denominator 5. Add the numerator 3. Write the answer over the denominator 5.

$$2\frac{3}{5} = 2 + \frac{3}{5} = 2 \times 5 = 10 : \quad 10 + 3 = \frac{13}{5}$$

==========

2. Change $5\frac{1}{4}$ to an improper fraction.

Multiply the whole number 5 by the denominator 4. Add the numerator 1. Write the answer over the denominator 4.

$$5\frac{1}{4} = 5 + \frac{1}{4} = 5 \times 4 = 20 : \quad 20 + 1 = \frac{21}{4}$$

Change the mixed numbers to improper fractions:

1) $1\frac{2}{4}$ 2) $1\frac{1}{3}$ 3) $2\frac{6}{7}$ 4) $5\frac{3}{10}$

5) $2\frac{3}{9}$ 6) $4\frac{2}{11}$ 7) $5\frac{2}{7}$ 8) $3\frac{5}{12}$

9) $9\frac{3}{5}$ 10) $5\frac{2}{5}$ 11) $3\frac{1}{2}$ 12) $6\frac{2}{3}$

13) $3\frac{3}{10}$ 14) $6\frac{2}{3}$ 15) $7\frac{3}{5}$ 16) $4\frac{3}{8}$

17) $2\frac{5}{9}$ 18) $9\frac{1}{6}$ 19) $4\frac{3}{8}$ 20) $7\frac{4}{5}$

CHAPTER SIXTEEN

Multiplication of Fractions and Mixed Numbers

I. AIM: To multiply fractions and mixed numbers.

II. METHOD:

1. Change each mixed number to an improper fraction.
2. Divide any numerator and denominator, if possible, by a number that will go into each, evenly.
3. Multiply the numerators.
4. Multiply the denominators.
5. Reduce to simplest form.

III. EXAMPLE:

1. $\frac{5}{8} \times \frac{1}{2} = \frac{5}{8} \times \frac{1}{2} = \frac{5}{16}$

==========

2. $\frac{3}{5} \times 4 = \frac{3}{5} \times \frac{4}{1} = \frac{12}{5} = 2\frac{2}{5}$

==========

3. $\frac{3}{12} \times \frac{12}{15} = \frac{3}{4} \times \frac{12}{15} = \frac{\cancel{3}^{1}}{\cancel{4}_{1}} \times \frac{\cancel{12}^{3}}{\cancel{15}_{5}} = \frac{1}{1} \times \frac{3}{5} = \frac{3}{5}$

==========

4. $3\frac{1}{5} \times 2\frac{4}{8} = \frac{16}{5} \times \frac{20}{8} = \frac{\cancel{16}^{2}}{\cancel{5}_{1}} \times \frac{\cancel{20}^{4}}{\cancel{8}_{1}} = \frac{2}{1} \times \frac{4}{1} = \frac{8}{1} = 8$

Multiply:

1) $\frac{1}{2} \times \frac{1}{2}$

2) $\frac{1}{8} \times \frac{1}{4}$

3) $\frac{1}{3} \times \frac{1}{4}$

4) $\frac{2}{5} \times \frac{3}{4}$

5) $\frac{3}{7} \times \frac{2}{5}$

6) $\frac{2}{5} \times \frac{1}{8}$

7) $\frac{4}{7} \times \frac{3}{9}$

8) $\frac{3}{10} \times \frac{5}{8}$

9) $\frac{4}{8} \times \frac{2}{6}$

10) $\frac{4}{12} \times \frac{3}{16}$

11) $\frac{1}{7} \times \frac{1}{9}$

12) $\frac{2}{7} \times \frac{3}{11}$

13) $\frac{4}{5} \times 3$

14) $5 \times \frac{2}{3}$

15) $3 \times \frac{5}{6}$

16) $\frac{7}{9} \times 3$

17) $\frac{9}{11} \times \frac{2}{3}$

18) $\frac{5}{6} \times \frac{9}{15}$

19) $\frac{12}{15} \times \frac{7}{14}$

20) $6\frac{1}{2} \times 5$

21) $7 \times 3\frac{2}{5}$

22) $11 \times \frac{2}{9}$

23) $3\frac{1}{2} \times 2\frac{1}{4}$

24) $4\frac{2}{8} \times \frac{1}{4}$

25) $\frac{2}{7} \times \frac{3}{18}$

26) $\frac{6}{21} \times \frac{7}{24}$

27) $\frac{3}{14} \times \frac{2}{6}$

CHAPTER SEVENTEEN

Division of Fractions and Mixed Numbers

I. AIM: To divide fractions and mixed numbers

II. METHOD:

1. Change each mixed number to an improper fraction.
2. A whole number is written over 1
3. Invert the fraction that follows the division sign.
4. Change the division sign to multiplication.
5. Follow rules for multiplication of fractions

III. EXAMPLE:

1. Divide: $\frac{1}{3} \div \frac{1}{4} = \frac{1}{3} \times \frac{4}{1} = \frac{4}{3} = 1\frac{1}{3}$

==========

2. Divide $\frac{3}{12} \div \frac{2}{6} = \frac{3}{\cancel{12}_{2}} \times \frac{\overset{1}{\cancel{6}}}{2} = \frac{3}{4}$

==========

3. Divide $5\frac{1}{2} \div \frac{2}{6} = \frac{11}{\cancel{2}_{1}} \times \frac{\overset{4}{\cancel{6}}}{2} = \frac{44}{2} = 22$

==========

4. Divide $3\frac{3}{7} \div 2\frac{3}{5} = \frac{24}{7} \times \frac{5}{13} = \frac{120}{91} = 1\frac{29}{91}$

Divide:

1) $\frac{1}{2} \div \frac{1}{4}$

2) $\frac{2}{4} \div \frac{1}{3}$

3) $\frac{7}{7} \div \frac{2}{6}$

4) $\frac{2}{5} \div \frac{3}{10}$

5) $\frac{3}{14} \div \frac{1}{7}$

6) $\frac{5}{8} \div \frac{10}{16}$

7) $\frac{7}{8} \div \frac{7}{16}$

8) $\frac{1}{2} \div \frac{2}{3}$

9) $\frac{4}{5} \div 2$

10) $\frac{5}{8} \div 5$

11) $\frac{9}{12} \div 3$

12) $4 \div \frac{3}{4}$

13) $6 \div 2\frac{1}{4}$

14) $4 \div 6\frac{3}{5}$

15) $\frac{7}{8} \div 3\frac{3}{4}$